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DIAGNOSES OF TEN NEW CHILOPODS WITH A NEW GENUS OF SOGONIDÆ AND A KEY TO THE SPECIES OF LOPHOBIUS

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Of the eleven chilopods described in this paper, ten are named for the first time, while the eleventh was previously incompletely diagnosed. The types of all these species are in the author's collection.

Cryptops sineticus Chamberlin, sp. nov.

Head overlapped by the first dorsal plate; without sulci. First plate not sulcate. Prehensors with claws of normal length; anterior margin of prosternum smooth and nearly straight, slightly obtusely indented to middle line, two setæ on each side just proximad of it. Paired dorsal sulci complete from third tergite caudad. Last ventral plate caudally widely rounded with middle part of margin straight or truncate. Last coxæ caudally subtruncate or slightly convex; pores of moderate size, numerous in an area rounded behind and not reaching caudal margin by a considerable distance, along ventral plate and reaching dorsal plate at proximal end of area; caudal margin setose, two or three setæ also proximad of end, one or more in prorigerous area. Anterior spiracles rather large, longitudinally subelliptic. Femur and tibia slightly notched on median line at distal end, rounded each side of notch but with no suggestion of processes; uniformly coarsely setose ventrally and laterally, the setæ finer on dorsal surface. Metatarsus with a series of eight teeth of which the most distal is abruptly much more robust, teeth decreasing in size proximad. First tarsal joint with a series of four teeth. Length, about 14 mm.

Locality. One specimen intercepted April 28, 1938, by quarantine inspector at Honolulu in soil about *Litchi chinensis* D. from China.

This species agrees in many features with *C. navis* Chamberlin from Singapore, Straits Settlement, but may readily be distinguished in having eight teeth on the metatarsus instead of five, etc.

Nipponobius cepeus Chamberlin, sp. nov.

Articles of antennæ 20, all rather short, with the ultimate nearly equal in length to the two preceding taken together. Ocelli 1 + 3, 2, those of lower series and the first or single ocellus much smaller, the single ocellus contiguous with the next one which is the largest. Prosternal teeth 2 + 2, pale. Ventral spines of anal legs, 0, 1, 2, 1, 0; dorsal spines, 1, 0, 2, 0, 0; claw single. Ventral spines of penultimate legs, 0, 1, 2, 1, 0; dorsal, 0, 0, 2, 0, 0; an accessory claw or spine present. Coxal pores small, circular, few in number. Claw of female gonopods tripartite, the teeth short; basal spines 2 + 2.

Locality. Japan. One female taken by plant quarantine inspector at Honolulu, April 11, 1938, in packing material about *Vandateres grandiflora*.

This species differs from *N. migrans* Chamberlin, the genotype, in having the claw of the anal legs single instead of double.

Oabius rodocki Chamberlin, sp. nov.

A brown-colored form related to *O. sastianus* in having the ventral spines of the anal legs normally 0, 1, 3, 3, 1 but differing in having the dorsal spines of the penultimate legs 1, 0, 3, 1, 0 instead of 1, 0, 3, 1, 1 and in having a slight dorsal lobe at the distal end of the fifth joint or metatarsus of the penultimate legs in the male. Antennæ short. Ocelli few, in three series. Posterior angles of eleventh and thirteenth dorsal plates slightly produced. Dorsal spines of the anal legs 1, 0, 3, 1, 0; the claw single. Ventral spines of the penultimate legs 0, 1, 3, 3, 2; the claw double. Only the last pair of coxæ laterally armed (female) or these also unarmed (male holotype). Last three pairs of coxæ dorsally armed. Ventral spines of the first pair of legs 0, 0, 1, 2, 1. Coxal pores small, circular, decreasing in size proximad on each coxa, in female allotype numbering 3, 4, 4, 4. Claw of female gonopods tripartite, the lobes short. Basal spines 2 + 2. Length of male holotype, 7.5 mm.; of female allotype, 10 mm.

Locality. Idaho: Spaulding. Taken under moist leaves in woods on November 18, 1939, by R. E. Rodock.

Oabius (*Nyctobius*) *boyeranus* Chamberlin, sp. nov.

Color pale brown, the head lighter; antennæ brown, the legs yellowish, the posterior pairs brightest. Antennæ short and attenuated, composed of twenty short articles. Ocelli 1 + 3, 2, the single ocellus largest, the anterior smallest. Prosternal teeth 2 + 2, uniform, small and pale; the median incision V-shaped. Legs with

tarsi relatively long, with suture more evident than usual. Ventral spines of anal legs 0, 1, 3, 2, 0; dorsal, 1, 0, 3, 0, 0, the coxal spine minute; armed with two claws. Ventral spines of penultimate legs, 0, 1, 3, 2, 1; dorsal, 0, 0, 3, 1, 0; claws 3. None of the posterior coxæ laterally armed. Dorsal spines of thirteenth legs, 0, 0, 3, 2, 2. Ventral spines of first legs 0, 0, 0, 0, 0. None of anterior legs with third joint ventrally armed. Coxal pores small, few in number. Length, about 10 mm.

Locality. Oregon: Boyer. One male taken in August, 1933.

The species is unique in the spining of the legs, which readily separates it from *decipiens* and *ineptus*, two Pacific Coast forms likewise having the anal legs bearing two claws.

OABIUS MIMOSUS Chamberlin

Oabius mimosus Chamberlin, 1938, Ann. Mag. Nat. Hist., (11) 2:631.

Claws of female gonopods tripartite, the lobes short; basal spines 2 + 2, the inner spine of each pair smaller. Third joint of all legs armed both dorsally and ventrally. Ventral spines of anal legs 0, 1, 3, 2, 0, dorsal spines 1, 0, 3, 1, 0; claw single. Ventral spines of penultimate legs 0, 1, 3, 3, 1; dorsal, 1, 0, 3, 1, 1; a minute accessory claw present. Dorsal spines of thirteenth legs, 1, 0, 3, 1, 1. Last two pairs of coxæ laterally armed. Ventral spines of first legs 0, 0, 1, 2, 1. Prosternal teeth 2 + 2, small and pale, equal, the median incision narrowly and acutely V-shaped. Single ocellus and first of seriate ocelli much the largest, the latter few, in two series. Antennæ short, composed of the usual twenty articles. Length, 8 mm.

Locality. Oregon: Boyer. Collected by Prof. J. A. Macnab in July, 1937.

This description is given here because most of the description in the place of first publication was inadvertently dropped out in the course of publication.

Pokabius pedus Chamberlin, sp. nov.

Yellow throughout. Antennæ moderate, composed of twenty articles. Ocelli 1 + 5, 5, the single ocellus larger, the others small and loosely arranged. Prosternal teeth very small, 2 + 2. Coxal pores small, circular, few. None of the dorsal plates with posterior angles produced. Last three pairs of coxæ dorsally armed, but spine of thirteenth pair minute; none armed laterally. Ventral spines of anal legs, 0, 1, 3, 2, 0; dorsal, 1, 0, 3, 1, 0; claw single. Ventral spines of penultimate legs, 0, 1, 3, 3, 1; dorsal, 1, 0, 3, 1, 1;

a minute accessory claw present. Ventral spines of first legs, 0, 0, 0, 2, 1. In the anal legs of the male the fourth joint modified much as in *nankus*, being extended at proximal end above into a conspicuous subconical process channeled down its ectodorsal side, the channel continuing as a longitudinal furrow on the joint; third joint not produced at distal end. Length, about 11 mm.

Locality. Utah: St. George. One male taken March 4, 1928, by A. M. Woodbury.

In the form of the process of the fourth joint of the anal legs of male, as well as in having none of the posterior coxæ laterally armed, resembling *disantus*; but in the latter there is a conspicuous dorsal lobe on the third joint that is lacking in *piedus*.

Lophobius sororis Chamberlin, sp. nov.

Color yellow throughout, the head and posterior segments sometimes darker, more orange. Antennæ short, articles twenty to twenty-two. Ocelli in a narrowly elliptic patch; the single ocellus moderately enlarged, contiguous with patch; usually about fourteen or fifteen in number, *e.g.*, 1 + 5, 5, 3. Prosternal teeth very small and pale, 2 + 2; the special seta on margin ectad of outer tooth on each side; median sinus narrowly V-shaped. Coxal pores small, round, uniseriate, *e.g.*, 2, 3, 3, 3. Ventral spines of anal legs, 0, 1, 3, 2, 0, or occasionally 0, 1, 3, 2, 1; dorsal spines, 1, 0, 3, 0, 0 (male) or 1, 0, 3, 1, 0 (female); claw single. Ventral spines of penultimate legs, 0, 1, 3, 3, 2; dorsal, 1, 0, 3, 1, 1; claw with small accessory claw on posterior side and a spine on anterior side. Dorsal spines of twelfth legs, 1, 0, 3, 1, 1. Ventral spines of twelfth and thirteenth legs, 0, 0, 2, 3, 2. Last five pairs of coxæ dorsally armed, last pair alone laterally armed. Dorsal spines of first legs, 0, 0, 3, 2, 2; ventral, 0, 0, 2(1), 3, 2. Claw of female gonopods tripartite, the lobes short. Basal spines 2 + 2, the spines subcylindrical with obliquely acute apex. Length, 9-10 mm.

Locality. Nevada: Ruby Valley. Numerous specimens under leaves on ground under growth of willow, June 15, 1935, R. V. Chamberlin, collector.

Resembling *collium* of the Salt Lake Valley, etc., but a smaller form differing in spining of legs, as indicated in the key, as well as in the form of the fourth joint of the anal legs of the male. It may be placed with reference to the previously known species by means of the key given below.

Lophobius apachus Chamberlin, sp. nov.

Light brown, the head and antennæ and the caudal end with last legs brighter yellow or orange. Lateral margins of head smooth, without breaks. Antennæ composed of twenty or twenty-one articles which are moderate or short in length. Ocelli 1 + 4, 5, 4, 2, in a narrowly elliptic patch; the single ocellus enlarged, contiguous with the patch. Prosternal teeth 2 + 2; median sinus large and V-shaped; ectal seta in the usual outer position, of ordinary form. None of dorsal plates with posterior angles produced. Ventral spines of anal legs, 0, 1, 3, 2, 1; dorsal, 1, 0, 3, 1, 0; claw single. Ventral spines of penultimate legs, 0, 1, 3, 3, 2; dorsal, 1, 0, 3, 1, 1; claw single. Last four pairs of coxæ dorsally armed, the anal pair alone laterally armed. Ventral spines of first legs, 0, 0, 2, 3, 2; dorsal, 0, 0, 3, 2, 2. Coxal pores small, round, 3, 3, 3, 3 (or 2). Anal legs of male rather slender, the fourth joint not swollen, but with a shallow longitudinal furrow above, the fifth joint also flattened or weakly longitudinally furrowed above; none of the joints lobate. Length, 15 mm.

Locality. Arizona: Duncan, September 5, 1939. Three males of which two are not fully grown.

This species is unquestionably close to *L. arizonæ* Chamberlin, described from Tucson, Arizona. It would seem to be sufficiently distinct in having the claw of the penultimate legs single, whereas in *arizonæ* there are two small but distinct accessory claws; also in having the dorsal spines of the first legs 0, 0, 3, 2, 2 instead of 0, 0, 2, 2, 2.

The following key will aid in separating the species now referred to *Lophobius*.

KEY TO SPECIES OF LOPHOBIUS

- 1 (24) All anterior legs, or all but first one or two pairs, with third joint bearing two ventral spines.
- 2 (23) Ventral spines of penultimate legs, 0, 1, 3, 3, 2.
- 3 (6) Anal legs armed with two claws.
- 4 (5) Ventral spines of anal legs 1, 3, 3, 1(0); ocelli in two series *lasalanus* Chamberlin
- 5 (4) Ventral spines of anal legs 1, 3, 2, 1; ocelli in from three to five series *socius* (Chamberlin)
- 6 (3) Anal legs with claw single.
- 7 (16) Dorsal spines of twelfth legs 1, 0, 3, 1, 1 or 0, 0, 3, 1, 1.
- 8 (13) Ventral spines of anal legs normally 0, 1, 3, 2, 0.
- 9 (12) Ventral spines of twelfth and thirteenth pairs of legs 0, 0, 3, 3, 2.

- 10 (11) Last three (or two) pairs of coxæ laterally armed.....
*collium* Chamberlin
- 11 (10) Only the last pair of coxæ laterally armed.....
*loganus* Chamberlin
- 12 (9) Ventral spines of twelfth and thirteenth pairs of legs
 0, 0, 2, 3, 2.....*sororis*, sp. nov.
- 13 (8) Ventral spines of anal legs normally 0, 1, 3, 2, 1.
- 14 (15) Last article of anal legs furrowed along mesal side;
 fourth joint in male with a conspicuous dorsal lobe at distal
 end*franciscæ* Chamberlin
- 15 (14) Anal legs not thus modified.....*pungonius* Chamberlin
- 16 (7) Dorsal spines of twelfth legs 1, 0, 3, 2, 2 or 1, 0, 3, 1, 2.
- 17 (20) Ventral spines of anal legs 0, 1, 3, 2, 1.
- 18 (19) Penultimate legs with claw single.....*apachus*, sp. nov.
- 19 (18) Penultimate legs with three claws.....*arizonæ* Chamberlin
- 20 (17) Ventral spines of anal legs normally 1, 3, 2, 0.
- 21 (22) Trochanter of thirteenth legs armed; last two pairs of
 coxæ laterally armed (spine rarely absent from penult.);
 fourth joint of anal legs of male only weakly elevated at distal
 end above.....*helenæ* Chamberlin
- 22 (21) Trochanter of thirteenth legs without spine; only last
 coxæ armed; fourth joint of anal legs elevated into a conspicu-
 ous process at distal end above.....*stenenus* Chamberlin
- 23 (2) Ventral spines of penultimate legs 0, 1, 3, 3, 1 (lobe at
 distal end of fourth joint of anal legs of male conspicuous)
*castellopes* (Chamberlin)
- 24 (1) First seven pairs of legs with the third joint bearing a
 single ventral spine.....*eremus* Chamberlin

Gosibius ameles Chamberlin, sp. nov.

Dorsum, head and antennæ brown, in part of chestnut shade. Legs yellow, the posterior pairs darker. Antennæ of moderate length, distally filiform, composed typically of about thirty segments. Ocelli 1 + 4, 2, 2, the single ocellus a little enlarged, ocelli of bottom row very small. Prosternal teeth 2 + 2, small, the special seta hair-like. Posterior angles of ninth, eleventh and thirteenth dorsal plates produced. Coxal pores small, round, 3, 4, 4, 4. Only the anal coxæ armed laterally and dorsally. Ventral spines of anal legs, 1, 3, 3, 1; dorsal, 1, 0, 3, 2, 0; claws 2. Ventral spines of penultimate legs, 0, 0, 3, 3, 2; dorsal, 0, 0, 3, 2, 2. Ventral spines of first legs, 0, 0, 1, 2, 1. Claw of female gonopods long, strictly entire. Basal spines 2 + 2. Length, 12 mm.

Locality. Utah: near Verdure. Two females taken April 18, 1928, by R. V. Chamberlin.

Of the known species *ameles* is apparently nearest to the Californian *G. monicus*, but is a smaller form differing in having only the coxæ of the last legs armed dorsally and laterally; in having the dorsal spines of the anal legs 1, 0, 3, 2, 0 instead of 1, 0, 3, 2, 2, etc.

Sepedonophilus hodites Chamberlin, sp. nov.

Yellow throughout excepting the claws of the prehensors which are dark brown or in part blackish. Cephalic plate much longer than broad, somewhat narrower behind than in front, the corners rounded and the lateral margins weakly arcuate. No frontal suture. Cephalic plate widely overlapping the basal plate, which is also overlapped by the tergite, the exposed portion being therefore very short. A small circular clypeal area far forward contrasting sharply by its clearness or lack of color from the surrounding region, its polygonal areas smaller and less clearly defined. In a transverse line on a level with caudal end of this area are two stout setæ on each side of middle. Side pieces of labrum well separated by the median piece. Maxillæ I without external lappets. Inner angle of coxa of second maxillæ not especially produced. Claws of prehensors when closed extending much beyond the front margin of the head. Anterior margin of prosternum with the usual two short, conical processes or teeth. Inner side of prehensors bearing a minute tooth below trochanteral suture, a larger one at distal end of femuroid, and one at base of claw joint which is largest of all, conical and acute. Tergite of first pediferous segment bisulcate but the sulci less sharply impressed than on the second and succeeding tergites. First spiracle large, vertically elliptic, larger than the second which is circular and intermediate in size. Last ventral plate very wide, strongly converging caudad; the sides convex, the caudal margins weakly convex. Coxæ of last legs each with a single, relatively large pore opening beneath the ventral plate and a few much smaller ones. Anal legs of male inflated, ending in slender claws. Pairs of legs, forty-nine. Length, about 18 mm.

Locality. Australia. One male taken by quarantine inspector at Honolulu, June 25, 1938, in soil about *Cymbidium lowianum*.

Distinguished from other known species by the number of pairs of legs, the character of the coxal pores, details of the mouthparts, etc.

Gossipina Chamberlin, gen. nov.

Resembling *Sogona* in general characteristics but differing in having only a single pit on each anal coxa as in *Timpina*.

Genotype: *Gossipina bexara*, sp. nov.

Gossipina may be placed with reference to the other known genera of the family by means of the following key:

KEY TO THE GENERA OF SOGONIDÆ

- 1 (4) Coxæ of anal legs with a single pit on each side.
- 2 (3) Tarsus of anal legs consisting of a single joint; prebasal plate not exposed.....*Timpina* Chamberlin
- 3 (2) Tarsus of anal legs two-jointed; prebasal plate exposed.
.....*Gossipina*, gen. nov.
- 4 (1) Coxæ of anal legs with two pits on each side.
- 5 (6) Anal legs ending in a claw.....*Garrina* Chamberlin
- 6 (5) Anal legs without claw.....*Sogona* Chamberlin

Gossipina bexara Chamberlin, sp. nov.

Cephalic plate longer than wide, narrowed in front of middle; frontal suture not evident; with a distinct median longitudinal sulcus. Prebasal plate narrowly exposed at the middle, the basal plate broad and long. Antennæ distally filiform, moderately compressed proximad of middle. Claws of prehensors when closed scarcely attaining front margin of head. All joints of prehensors short, not armed within. Chitinous lines fine but complete. Spiracles small, circular, very gradually decreasing in size from the first caudad. Tergites bisulcate. Last dorsal plate broad, shield-shaped. Ventral pores fine, in a narrow transverse band running across sternite just behind middle as in *Sogona minima*, the poriferous area not depressed or sharply limited. Last ventral plate very wide; sides convex and converging caudad; caudal margin straight. Coxal pits large, one on each side, this covered by last plate which is slightly emarginate opposite it as in *Timpina texana*. Anal legs in male moderately swollen, with the last article abruptly reduced in diameter and ending in a slight terminal, setigerous lobe in place of a claw; seven articles inclusive of coxa. Pairs of legs, sixty-three. Length of male holotype, about 18 mm.

Locality. Texas: Bexar County, November 9, 1936. One male received from the U. S. Bureau of Entomology and Plant Quarantine.